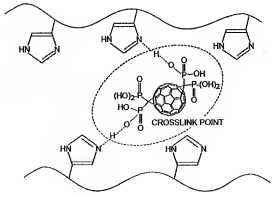
REMARKS

This Response is in reply to a Final Office Action dated August 17, 2010. Claims 27-33 and 35-52 are pending with claims 39-52 withdrawn from consideration. The Office Action rejected Claims 27-33 and 35-38 under 35 U.S.C. §103. Claim 27 has been amended herein. Applicants respectfully submit that the rejections are improper or have been overcome, as set forth in detail below. A Request for Continued Examination is submitted herewith. The Commissioner is hereby authorized to charge deposit account 02-1818 for any fees which are due and owing.

Claims 27-33 and 35-38 stand rejected under 35 U.S.C. §103(a) as unpatentable over WO 02/058177, corresponding to U.S. Patent No. 7,226,699 to Uetake ("Uetake"), in view of U.S. Publication 2004/013925 to Komiya ("Komiya.") and newly cited U.S. Publication No. 2003/0148161 to Nuber et al. ("Nuber").

Of the rejected claims, Claim 27 is the sole independent claim. Claim 27 has been amended to recite, at least in part, an ionic conductor having: a derivative in which an ion-dissociative group is bound to a carbonaceous substance composed of at least one species selected from the group consisting of fullerene molecule, cluster mainly composed of carbon, and structure of linear or tubular carbon; and a polymerized substance having a basic group, wherein the polymerized substance having said basic group is a polymer of a compound containing at least any one of a nitrogen atom, an oxygen atom and a sulfur atom, wherein an ion complex is formed between the derivative and the polymerized substance having the basic group, and the derivative is a crosslink point between different portions of the polymerized substance having the basic group. This amendment is supported, for example, in Fig. 1 below.

FIG. 1



As shown above in the non-limiting example of Fig. 1, the ionic conductor has an ion complex formed between the derivative (substituted fullerene) and the polymerized substance having the basic group (e.g., polyvinylimidazole), and this makes the ionic conductor insoluble to water, methanol solution and so forth, and makes it physically stable, so that it is made possible to realize a device having excellent performances when applied, for example, to fuel cells, allowing start-up under low temperatures at around room temperature and under dryness. (See, Specification, pg. 7, lines 17-25). As also shown in Fig. 1 above, the derivative functions as a crosslink point between the strands of the polymerized substance having the basic group, as presently claimed.

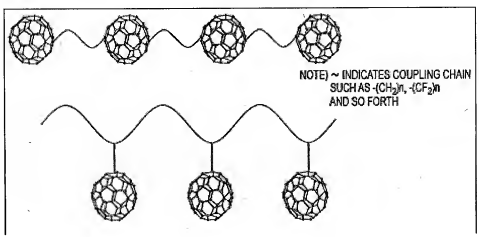
As stated in the Office Action, the primary Uetake reference "does not specifically disclose wherein the polymer of said substance having said basic group is a polymer of a compound containing at least one of a nitrogen atom, an oxygen atom and a sulfur atom." Moreover, Uetake does not disclose wherein an ion complex is formed between the derivative and the polymerized substance having the basic group, as required by amended Claim 27. Uetake also fails to disclose wherein the derivative is a crosslink point between the strands of the polymerized substance having the basic group. Therefore, Uetake is deficient with regard to several aspects of the presently claimed invention. Accordingly, the Patent Office relies on Komiya and Nuber to remedy the deficiencies of Uetake.

Komiya is relied on for disclosing a proton conductive solid polymer electrolyte including a polymer having a basic group and containing at least one of a nitrogen atom, an oxygen atom and a sulfur atom, such as polyvinylimidazole. (See, Office Action, pg. 3). The Office Action cites to pg. 3, paragraph [0035] of Komiya for disclosing polyvinylimidazole. However, Komiya discloses that it is preferable to "use basic solid polymer having the structural unit of the secondary amine monomer" and that "polyvinylimidazole" is only used as "a lone pair material." (See, Komiya, [0032]). In particular, Komiya describes that: "[i]t is noted that one or more unillustrated lone pair materials (materials each of which has at least one lone pair) are dispersed in the base material ... [a]s described later on, the lone pair material acts as the proton accepter in the base material." (See, Komiya, [0032]). However, nowhere does Komiya disclose of suggest that the polyvinylimidazole (or other lone pair materials) are used such that an ion complex is formed between the derivative and the polymerized substance having the basic group. Moreover, Komiya does not disclose or suggest that such a lone pair material polymer

should be used in combination with a derivative (e.g., substituted fullerene) as presently claimed. Also, the Office Action admits that Uetake and Komiya are deficient with respect to the claimed invention: "they do not specifically disclose wherein an ion complex is formed between the derivative and the polymerized substance having the basic group." (See, Office Action, pg. 3). In addition, Uetake and Komiya fail to disclose or suggest wherein the derivative is a crosslink point between the strands of the polymerized substance having the basic group, as claimed. As such, Komiya fails to cure the deficiencies of Uetake, even assuming that the references are properly combinable.

The Nuber reference is relied on for disclosing "a method of producing a proton conductor comprising a polymerization method using heat over a certain period of time." (See, Office Action, pg. 3). However, Nuber does not disclose or suggest wherein the derivative is a crosslink point between the strands of the polymerized substance having the basic group. In particular, in Nuber, the only polymerization that is discussed is between separate fullerene molecules. Nuber discloses: "because the proton conductor of the present invention is largely water soluble as a molecule, it is beneficial to form a polymer by cross-linking the fullerene molecules that have the spacer molecules and the proton conductive groups attached thereto ... [t]herefore, the number of spacer molecules attached to the fullerene molecule must be balanced with the need also to attach linking molecules thereto in order to form a cross-linked polymer." (See, Nuber, [0043]). Such a polymerization process disclosed in Nuber is perhaps relevant to the method discussed with regard to Fig. 6 of the present application shown below.

FIG. 6



As discussed on pg. 12, lines 5-10 of the present application, "[t]he derivative may also be composed of chemically or physically coupled product or crosslinked product of the carbonaceous substances ... [f]or example, Fig. 6 shows various examples of the clusters bound to each other, wherein all of these structures are applicable to the present invention." However, such a polymerization process only relates to preparation of the derivative, and not to the actual crosslinking of a derivative with the presently claimed polymerized substance having a basic group. There appears to be no disclosure in Nuber regarding a polymerization process whereby the fullerene molecules are used as crosslink points between respective stands of a derivative in which an ion-dissociative group is bound to a carbonaceous substance composed of at least one species selected from the group consisting of fullerene molecule, cluster mainly composed of carbon, and structure of linear or tubular carbon, as presently claimed. As such, Nuber fails to remedy the deficiencies of Uetake and Komiya, even assuming that the references are properly combinable.

Accordingly, for at least the reasons discussed above, Applicants respectfully request that the 35 U.S.C. §103(a) rejections of Claims 27-33 and 35-38 be withdrawn.

For at least the reasons above, Applicants respectfully submit that the present application is in condition for allowance and earnestly solicit reconsideration of same.

Respectfully submitted,

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Dated: November 17, 2010